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Psychometric assessment of the short-form Child Perceptions Questionnaire: an international collaborative study

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Abstract

Objective: To examine the factor structure and other psychometric characteristics of the most commonly-used child oral-health-related quality of life (OHRQoL) measure (the 16-item short-form CPQ_{11-14}) in a large number of children (N = 5804) from different settings and who had a range of caries experience and associated impacts.

Methods: Secondary data analyses used subnational epidemiological samples of 11-to-14-year-olds in Australia (N = 372), New Zealand (three samples; 352, 202, 429), Brunei (423), Cambodia (244), Hong Kong (542), Malaysia (439), Thailand (220, 325), England (88, 374), Germany (1055), Mexico (335) and Brazil (404). Confirmatory factor analysis (CFA) was used to examine the factor structure of the CPQ_{11-14} across the combined sample and within four regions (Australia/NZ, Asia, UK/Europe, Latin America). Item impact and internal reliability analysis were also conducted.

Results: Caries experience varied, with mean DMFT scores ranging from 0.5 in the Malaysian sample to 3.4 in one New Zealand sample. Even more variation was noted in the proportion reporting only fair or poor oral health; this was highest in the Cambodian and Mexican samples, and lowest in the German sample and one New Zealand sample. One in 10 reported that their oral health had a marked impact on their life overall. The CFA across all samples revealed two factors with eigenvalues greater than 1. The first involved all items in the *oral symptoms* and *functional limitations* subscales; the second all *emotional well-being* and *social well-being* items. The first was designated the "Symptoms/function" subscale, and the second was designated the "Well-being" subscale. Cronbach's alpha scores were 0.72 and 0.84 respectively. The *Symptoms/function* subscale contained more of the items with greater impact, with the item "Food stuck in between your teeth" having greatest impact; in the *Well-being* subscale, the "Felt shy or embarrassed" item had the greatest impact. Repeating the analyses by world region gave similar findings.

Conclusion: The CPQ_{11-14} performed well cross-sectionally in the largest analysis of the scale in the literature to date, with robust and mostly consistent psychometric characteristics, albeit with two underlying factors (rather than the originally hypothesised four-factor structure). It appears to be a sound, robust measure which should be useful for research, practice and policy.

Introduction

Oral-health-related quality of life (OHRQoL) is an increasingly important concept in dental health services research, and the last 25 years have witnessed a burgeoning of theoretical and empirical research on scales for use with adults. Work on child measures has been about a decade behind, but it is rapidly catching up, with the emergence of a number of child OHRQoL measures in recent years. These include the 37-item Child Perceptions Questionnaire (CPQ_{11-14})[1], the 34-item Child Oral Health Impact Profile (COHIP)[2] and the eight-item Child Oral Impacts on Daily Performance scale (CHILD-OIDP)[3].

The CPQ_{11-14} (along with its short-form versions) remains the most commonly used instrument for measuring self-reported oral health in children[4]; to date, the original 2002 paper[1] has been cited 304 times[i], with most of those citations being in reports from empirical studies. This measure has used items representing each of the domains of *oral symptoms*, *functional limitations*, *emotional well-being*, and *social well-being*. Subsequently, the development team published four short-form versions of the instrument, all of which had items covering each of those four domains or subscales[5]. Much of the recent published research has used the 16-item "impact" short-form (ISF) version of the CPQ_{11-14}, developed by Jokovic *et al* (2006)[4] and first tested and validated epidemiologically in New Zealand[6].

Factor analysis is an important step in construct validation for self-report scales[7] because it examines and confirms the underlying latent variables which the scale items are purported to represent. Interestingly, there was no mention of any such exploration of the data—or elucidation of the factor structure—in the original description[1] of the development of the CPQ_{11-14}. It appears that the four domains were hypothetical, albeit underpinned by a considerable amount of qualitative preliminary research. Subsequent work with a sample of children in Hong Kong did confirm the underlying four-factor structure[8], but the generalisability of those findings to other settings or cultures is unclear.

Accordingly, there is a need to examine and confirm (or indeed refute) the factor structure and other psychometric characteristics (validity and internal consistency reliability) of the CPQ_{11-14} in representative samples of children from a number of settings. We aimed to undertake such analyses using data-sets from Oceania, Asia, Europe and Latin America. We hypothesised that the analyses would confirm the measure's original four-factor structure.

[i] Scopus; data accessed 16/2/16

Methods

Secondary data analyses were conducted on data from 5804 children using subnational samples of 11- to 14-year-olds in Australia, New Zealand (three samples), Brunei, Cambodia, Hong Kong, Malaysia, Thailand (two samples), England (two samples), Germany, Mexico and Brazil (details in Appendix 1). Data-sets were chosen pragmatically, based on the availability of data. All but the Cambodian and two England samples were representative. All studies had used either the 37-item[1] or the impact short-form 16-item[5] version of the CPQ_{11-14}. Response options and scores for each item were: "Never" (scoring 0); "Once or twice" (1); "Sometimes" (2); "Often" (3); and "Every day or almost every day" (4). Two global questions on OHRQoL were also reported. First, participants were asked to rate the health of their teeth, lips, jaws and mouth; and second, they were asked how much their teeth, lips, jaw or mouth affects their life overall. Dental examinations were conducted and DMFT scores were calculated. Methodological details of each of the individual studies are presented in Appendix 1.

Data analysis

Analyses were confined to the 16-item ISF version of the CPQ_{11-14} because not all studies had used the full version (thus, scores could range from 0 to 64). Confirmatory factor analysis (CFA) was used in SPSS (version 21) to examine the factor structure (by principal components analysis with varimax rotation – chosen over other approaches because of its simplicity, accessibility and history of use in similar investigations) of the CPQ_{11-14} across the combined sample and within four geographic regions. In undertaking the CFA, the proposed model was the accepted and commonly used four-factor one, involving the domains of oral symptoms (OS), functional limitations (FL), emotional well-being (EW) and social well-being (SW), and with four items loading on each[5].

There were missing responses in the Hong Kong and German data-sets. In the former, there were 3 missing responses for the "bad breath" item, and all other items had complete data. In the German data-set, only three items had complete data; the remainder had between one and 13 missing responses, with 11 items having fewer than seven. We imputed missing values by assigning the median value across all 16 items, doing this separately for the Hong Kong and German data-sets. Comparison of the CFA outcomes before and after undertaking the

imputation revealed that there was no effect on the overall outcome, and that any differences observed were very minor (at the level of two to three decimal places in the factor loadings).

As a concurrent validity check, participants responded to the questions (a) "How much does the condition of your teeth, lips, jaws or mouth affect your life overall?" (scored on a 5-point ordinal scale ranging from 'Excellent' to 'Poor'), and (b) "Would you say the health of your teeth, lips, jaws and mouth is: 'Excellent'/'Very good'/'Good'/'Fair' /'Poor'?". Validity was deemed to be acceptable if there was an ascending gradient in mean CPQ_{11-14} scores across those response categories.

Results

Summary data on the characteristics of the various samples are presented in Table 1. Overall, just over half of the combined sample was female; ages ranged from 11 to 14 years, with an average of around 12. Just over half had had permanent dentition caries experience (1+ DMFT), but this varied considerably across the samples, being the lowest in the Australian sample and highest in the Mexican sample. Similar variation was observed with respect to mean DMFT scores across the samples: those were lowest in the Malaysian sample and highest in one of the New Zealand samples. Even more variation was noted in respect of the proportion reporting only fair or poor oral health; this was highest in the Cambodian and Mexican samples, and lowest in the German sample and the third New Zealand sample. One in 10 reported that their oral health had a marked impact on their life overall (that is, they responded 'a lot' or 'very much' to the first global item).

The correlation matrix for the 16 CPQ_{11-14} items is presented in Table 2. Overall, there were higher correlations among the *emotional well-being* and *social well-being* items than among the *oral symptoms* and *functional limitations* items.

The outcome of the CFA is presented in Table 3. There were two identified factors with eigenvalues greater than 1. The first involved all of the items in the *oral symptoms* and *functional limitations* subscales; the second involved all of the items in the *emotional well-being* and *social well-being* scales. After confirmation of their internal consistency reliability (reflected in Cronbach's alpha scores of 0.72 and 0.84 respectively), the first was designated the "Symptoms/function" subscale, and the second was designated the "Well-being" subscale.

Repeating the CFA separately for boys and girls resulted in very similar outcomes (see Appendix 2, Table A1). Repeating the CFA by region (Appendix 2, Table A2) gave largely consistent outcomes, save for the Mexico/Brazil region, where two of the items loaded more strongly on the other factor. The "Difficulty biting or chewing food…" item loaded more strongly on Factor 1 than on Factor 2, and the "Other children teased you or called you names" loaded more strongly on Factor 2 than on Factor 1.

The outcome of the item impact analysis is summarised in Table 4. The *Symptoms/function* subscale had more of the items with greater frequency of impact, and this was reflected in the lower mean rank across those items. Within that subscale, the item "Food stuck in between your teeth" had the highest impact score, and the "Difficulty saying any words" item the lowest. In the *Well-being* subscale, the greatest frequency of impact was seen with the "Felt shy or embarrassed" item, and the lowest was seen with the "Other children asked questions about teeth" item.

The demonstration of concurrent validity (whereby an instrument correlates well with a "gold standard" measure that has already been validated) requires ascending gradients to be observed in mean scale scores and impact prevalence rates (one or more impacts 'fairly often' or 'very often' were reported by 39.0% of participants overall) across the ordinal categories of the two global items which are usually used with the scale. This was largely the case (Table 5), although there were minor differences. For example, the 'Very good' category for the first question was problematic for some of the observed gradients, and the most severe category for the second global question had a lower mean score in the Australia/New Zealand sample.

Discussion

This study set out to examine the factor structure and other psychometric characteristics of the $CPQ_{11\text{-}14}$ in a large data-set of over 5000 children comprising information from samples from a number of settings, and with a range of dental caries experience and associated impacts. The $CPQ_{11\text{-}14}$ was found to perform very well, with robust and mostly consistent psychometric characteristics, albeit with two underlying factors rather than the originally hypothesised four-factor structure. Its internal consistency reliability and concurrent validity were acceptable.

It is appropriate first to consider the weaknesses and strengths of the study. The nature of the samples is a possible weakness, with all being subnational rather than nationally generalisable. Thus, any cross-national comparisons which might be made should be undertaken with a degree of caution. The small number of missing data items in the German and Hong Kong samples was less than ideal, but the missing data were confirmed not to have affected the overall findings. Another possible weakness is that the relatively low mean scores for those with 'Poor' self-reported oral health (such as the 17.7 in the overall sample) do suggest a floor effect which might compromise the measure's evaluative and discriminative utility in population-based samples but make it more useful perhaps in clinical samples; however, this remains to be explored. Moreover, there is always the possibility of subtle differences in meaning and interpretation having arisen from the translation of items, although it is to be hoped that this might be offset to a degree by the cross-cultural origins of the original item pool. The study's strengths include the large sample size, the concurrent collection of clinical measures, and the geographical and cultural diversity of the overall data-set.

Other than our confirmation of the measure's psychometric soundness, the most important finding was that the underlying structure of the CPQ_{11-14} comprises two factors rather than the original four, with the *oral symptoms* and *functional limitations* items loading together on a single factor, and the *emotional well-being* and *social well-being* items doing the same. Somewhat to our relief, the items in the original four hypothesised factors corresponded well to the subsequent two factors, and so there is a reassuring degree of theoretical consistency in our findings. As mentioned above, factor analysis was not used in the development of the CPQ_{11-14}[1], with item impact analysis being preferred on the grounds that factor analysis may inadvertently exclude so-called "orphan" items which may be important to respondents[ii]. Thus, the originally hypothesised four domains were based upon a theoretical conceptual framework to which the constituent items were forced to fit. Later work confirmed the underlying four-factor structure in a Hong Kong sample[8], but no further exploration of the measure's factor structure has been reported. Accordingly, the current study's use of a diverse international data-set underlines the appropriateness of redesignating the two observed factors as the *symptoms/function* and *well-being* subscales. Of course, their use may require some re-analysis of previous data-sets—or the computation and reporting of two sets of subscale scores with more contemporary data—if historical comparisons are to be made. These are minor concerns,

[ii] A Jokovic, personal communication to WMT, 31 October 2000

however, given the accessibility of analyses these days. Moreover, using two eight-item subscales rather than four four-item ones might ensure greater statistical power (and a lower likelihood of Type II error, especially where there are constraints on participant numbers), and the greater number of items allows finer discrimination[7].

The item impact analysis was notable for the predominance of the *symptoms/function* items. This was somewhat surprising, and it can most likely be attributed to our use of epidemiological samples of children (with generally low disease levels) rather than purposive samples of (say) orthodontic patients or those with orofacial clefts. It might be expected that the *well-being* aspects would be more dominant in the latter two groups, as previously observed in the original validation study[1], but this awaits empirical confirmation in larger samples.

The history of OHRQoL scales in dental research involves a well-trodden sequence[9]: initial conceptualisation and scale development; testing and validation in patient samples; epidemiological field-testing and validation in descriptive studies; development and testing of short-form versions; examination of the measure's responsiveness in longitudinal studies; and (it is hoped) the measure's routine use in everyday clinical practice. The concurrent development of competing measures also features strongly. While the exact sequence may vary, the overall progression of ideas and information capture is largely similar. At some point toward the end of this sequence, it is useful to take stock, to obtain an overview of the data and determine whether the measure continues to perform as originally designed. Accordingly, studies such as the current one are important because they can provide useful verification that a measure still meets the needs for which it was first developed. Confirmation of the scale's underlying factor structure and important psychometric properties provides further support for its ongoing utility in dental epidemiological and health services research, although there are insufficient longitudinal data available internationally to permit a similar examination of its responsiveness (and so the current study was a cross-sectional assessment only). In conclusion, the short-form $CPQ_{11\text{-}14}$ appears to be a sound, robust measure which should be useful for research, practice and policy.

Acknowledgments

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Table 1: Overview of the sociodemographic characteristics and oral health of the various samples (both individually and in aggregate; brackets contain percentages unless otherwise indicated)

Sample and region	Number	Mean age (sd; range)	Females	Prevalence of 1+ DMFT	Mean DMFT (sd; range)	Fair/poor oral health	Oral health has marked impact on life overall
Oceania	**1355**	**11.7 (0.9; 11 to 14)**	**655 (48.3)**	**768 (56.7)**	**1.7 (2.2; 0-13)**	**221 (16.3)**	**112 (8.3)**
New Zealand 1	352	11.0 (—; 11 to 11)	171 (48.6)	152 (43.2)	1.0 (1.6; 0-9)	79 (22.4)	33 (9.4)
New Zealand 2	202	11.0 (—; 11 to 11)	101 (50.0)	156 (77.2)	3.4 (3.0; 0-13)	42 (20.8)	19 (9.4)
New Zealand 3	429	12.2 (0.4; 11 to 13)	202 (47.1)	311 (72.5)	2.0 (2.0; 0-9)	49 (11.4)	31 (7.2)
Australia	372	12.3 (1.1; 11 to 14)	181 (48.7)	149 (20.1)	1.0 (1.7; 0-12)	51 (13.7)	29 (7.8)
Asia	**2193**	**11.7 (0.7; 11 to 14)**	**1104 (50.3)**	**1136 (51.8)**	**1.4 (1.9; 0-16)**	**1031 (47.0)**	**300 (13.7)**
Cambodia	244	12.5 (1.0; 11 to 14)	109 (44.7)	174 (71.3)	2.6 (2.6; 0-14)	213 (87.3)	50 (20.5)
Brunei	423	11.2 (0.4; 11 to 14)	217 (51.3)	265 (62.6)	2.0 (2.4; 0-16)	132 (31.2)	75 (17.7)
Hong Kong	542	12.0 (—; 12 to 12)	225 (41.5)	208 (38.4)	0.8 (1.3; 0-10)	286 (52.8)	132 (24.4)
Malaysia	439	12.0 (0.2; 12 to 13)	256 (58.3)	120 (27.3)	0.5 (1.0; 0-5)	99 (22.6)	28 (6.4)
Thailand 1	220	11.1 (0.2; 11 to 12)	114 (51.8)	127 (57.7)	1.2 (1.3; 0-6)	126 (57.3)	7 (3.2)
Thailand 2	325	11.1 (0.3; 11 to 14)	183 (56.3)	242 (74.5)	2.0 (1.8; 0-8)	175 (53.8)	8 (2.5)
Europe	**1517**	**12.1 (1.0; 11 to 14)**	**850 (56.0)**	**526 (34.7)**	**0.8 (1.5; 0-15)**	**175 (11.5)**	**103 (6.8)**
England 1	88	12.4 (1.1; 11 to 14)	41 (46.6)	30 (34.1)	1.2 (2.8; 0-15)	17 (19.3)	9 (10.2)
England 2	374	11.6 (0.5; 11 to 12)	252 (67.4)	133 (35.6)	0.7 (1.2; 0-5)	61 (16.3)	32 (8.6)
Germany	1055	12.3 (1.1; 11 to 14)	557 (52.8)	363 (34.4)	0.8 (1.5; 0-13)	97 (9.2)	62 (5.9)
Latin America	**739**	**12.6 (1.0; 11 to 14)**	**350 (47.4)**	**538 (72.8)**	**2.4 (2.4; 0-12)**	**445 (60.2)**	**74 (10.0)**
Mexico	335	12.8 (0.7; 12 to 14)	151 (45.1)	279 (83.3)	3.2 (2.5; 0-12)	244 (72.8)	38 (11.3)
Brazil	404	12.4 (1.1; 11 to 14)	199 (49.3)	259 (64.1)	1.8 (2.1; 0-12)	201 (49.8)	36 (8.9)
All combined	**5804**	**11.9 (0.9; 11 to 14)**	**2959 (51.0)**	**2968 (51.1)**	**1.4 (2.0; 0-16)**	**1872 (32.3)**	**589 (10.2)[a]**

[a]Data missing for 2 cases

Table 2: Correlation matrix for the 16 items

	Pain	Sores	Bad breath	Food stuck	Taken longer	Diff. chewing	Diff. saying	Hot/cold	Irritable	Shy/emb.	Others think	Upset	Avoid smiling	Argued	Teased	Questioned
Pain	1.00															
Sores	0.37	1.00														
Bad breath	0.24	0.20	1.00													
Food stuck	0.28	0.23	0.30	1.00												
Taken longer	0.27	0.19	0.19	0.20	1.00											
Diff. chewing	0.35	0.25	0.21	0.25	0.35	1.00										
Diff. saying	0.23	0.20	0.20	0.19	0.23	0.27	1.00									
Hot/cold	0.30	0.21	0.19	0.20	0.26	0.35	0.24	1.00								
Irritable	0.35	0.27	0.25	0.27	0.31	0.34	0.28	0.31	1.00							
Shy/emb.	0.28	0.18	0.28	0.23	0.31	0.30	0.26	0.30	0.51	1.00						
Others think	0.29	0.19	0.29	0.24	0.28	0.31	0.24	0.27	0.42	0.54	1.00					
Upset	0.31	0.23	0.23	0.25	0.29	0.32	0.27	0.27	0.54	0.58	0.49	1.00				
Avoid smiling	0.22	0.16	0.18	0.16	0.22	0.29	0.25	0.27	0.33	0.42	0.41	0.37	1.00			
Argued	0.22	0.14	0.20	0.18	0.25	0.22	0.18	0.20	0.38	0.37	0.32	0.41	0.26	1.00		
Teased	0.27	0.20	0.18	0.21	0.22	0.25	0.24	0.19	0.39	0.42	0.38	0.44	0.32	0.34	1.00	
Questioned	0.26	0.22	0.19	0.22	0.23	0.27	0.22	0.21	0.30	0.34	0.36	0.32	0.30	0.25	0.34	1.00

Table 3: Outcome of confirmatory factor analysis of the CPQ_{11-14} (all samples combined; rotated solution)

Item	Factor loadings	
	Factor 1	Factor 2
Pain in your teeth, lips, jaws or mouth	0.184	0.670
Sores in your mouth	0.032	0.652
Bad breath	0.194	0.460
Food stuck in between your teeth	0.136	0.560
Taken longer than others to eat a meal	0.299	0.450
Difficulty biting or chewing food…	0.262	0.594
Difficulty saying any words	0.259	0.433
Difficult to drink or eat hot or cold foods	0.235	0.516
Felt irritable or frustrated	0.618	0.356
Felt shy or embarrassed	0.765	0.202
Been concerned what other people think	0.685	0.243
Been upset	0.744	0.227
Avoided smiling or laughing	0.591	0.183
Argued with other children or your family	0.599	0.124
Other children teased you or called you names	0.640	0.165
Other children asked questions about teeth	0.463	0.297

[d]Factor 1 eigenvalue = 5.3, with 33.1% of the variance explained; Factor 2 eigenvalue = 1.3, with 7.9% of the variance explained; KMO = 0.93

Table 4: Item impact analysis for the CPQ_{11-14}, by subscale (all samples combined)

Item	Prevalence[a]	Mean[b]	Impact[c]	Rank overall[d]	Rank in domain	Original domain[e]
Symptoms/function						
Pain in your teeth, lips, jaws or mouth	24.6	2.2	54.1	4	3	Oral symptoms
Sores in your mouth	22.5	2.2	49.5	8	6	Oral symptoms
Bad breath	35.6	2.2	78.3	2	2	Oral symptoms
Food stuck in between your teeth	50.7	2.4	121.7	1	1	Oral symptoms
Taken longer than others to eat a meal	21.6	2.4	51.8	5	4	Functional limitation
Difficulty biting or chewing food…	17.3	2.4	41.5	12	7	Functional limitation
Difficulty saying any words	13.7	2.4	32.9	14	8	Functional limitation
Difficult to drink or eat hot or cold foods	21.0	2.4	50.4	7	5	Functional limitation
Well-being						
Felt irritable or frustrated	22.0	2.3	50.6	6	2	Emotional well-being
Felt shy or embarrassed	24.1	2.3	55.4	3	1	Emotional well-being
Been concerned what other people think	21.5	2.3	49.5	9	3	Emotional well-being
Been upset	20.3	2.3	46.7	10	4	Emotional well-being
Avoided smiling or laughing	13.4	2.4	32.2	15	7	Social well-being
Argued with other children or your family	17.5	2.4	42.0	11	5	Social well-being
Other children teased you or called you names	16.7	2.4	40.1	13	6	Social well-being
Other children asked questions about teeth	11.1	2.2	24.4	16	8	Social well-being

[a]Percentage reporting it 'Sometimes', 'Often', or 'Every day or almost every day'

[b]Mean item score among those reporting it 'Sometimes', 'Often', or 'Every day or almost every day'

[c]The product of the prevalence and the mean score

[d]Mean rank for the first block of items = 6.6 (53/8); for the second, it is 10.4 (83/8)

[e]In the previously-accepted four-factor structure for the CPQ_{11-14}

Table 5: Concurrent validity of the CPQ_{11-14}, by region

	Would you say the health of your teeth, lips, jaws and mouth is:					
	Excellent	Very good	Good	Fair	Poor	Overall
Combined sample (%)						
Mean CPQ_{11-14} (sd)	8.1 (6.5)	7.9 (6.6)	10.6 (7.5)	13.2 (8.5)	17.7 (10.3)[a]	10.9 (8.1)[a]
Impact prevalence (%)	113 (28.8)	329 (25.7)	834 (36.9)	783 (49.7)	203 (68.4)[a]	2262 (39.0)[a]
Oceania						
Mean CPQ_{11-14} (sd)	6.7 (5.4)	7.5 (6.0)	10.6 (7.1)	15.1 (9.0)	18.5 (8.5)[a]	10.1 (7.6)[a]
Impact prevalence (%)	25 (20.8)	109 (26.6)	243 (40.2)	130 (65.0)	18 (85.7)[a]	525 (38.7)[a]
Asia						
Mean CPQ_{11-14} (sd)	12.9 (7.1)	12.7 (7.7)	13.3 (7.7)	13.8 (8.6)	16.9 (10.4)[a]	13.6 (8.3)[a]
Impact prevalence (%)	43 (40.6)	92 (33.2)	327 (42.0)	435 (50.1)	109 (66.9)[a]	1006 (45.9)[a]
Europe						
Mean CPQ_{11-14} (sd)	5.7 (5.2)	5.8 (5.3)	7.8 (6.4)	9.5 (8.4)	26.2 (9.2)[a]	7.2 (6.6)[a]
Impact prevalence (%)	33 (24.1)	116 (21.1)	200 (30.6)	73 (44.8)	12 (100.0)[a]	434 (28.6)[a]
Latin America						
Mean CPQ_{11-14} (sd)	7.0 (5.0)	7.0 (4.7)	9.1 (7.0)	12.2 (7.5)	17.8 (10.1)[a]	11.6 (8.1)[a]
Impact prevalence (%)	12 (41.4)	12 (29.3)	64 (28.6)	145 (42.2)	64 (63.4)[a]	297 (40.2)[a]
	How much does the condition of your teeth, lips, jaws and mouth affect your <u>life</u> <u>overall</u>?					
	Not at all	Very little	Some	A lot	Very much	
Combined sample (%)						
Mean CPQ_{11-14} (sd)	8.5 (6.5)	10.5 (7.5)	12.9 (8.6)	13.1 (10.2)	12.5 (10.7)[a]	
Impact prevalence (%)	452 (29.7)	827 (38.9)	708 (45.2)	218 (46.6)	57 (47.1)[a]	
Oceania						
Mean CPQ_{11-14} (sd)	7.0 (5.3)	10.0 (6.6)	13.7 (8.3)	16.6 (11.2)	12.5 (10.1)[a]	
Impact prevalence (%)	115 (25.9)	211 (37.9)	133 (54.7)	49 (61.3)	17 (53.1)[a]	
Asia						
Mean CPQ_{11-14} (sd)	11.4 (7.3)	14.2 (7.8)	15.3 (8.2)	13.2 (10.2)	8.5 (8.8)[a]	
Impact prevalence (%)	202 (38.2)	305 (49.8)	373 (49.7)	112 (45.5)	14 (25.9)[a]	
Europe						
Mean CPQ_{11-14} (sd)	6.8 (5.6)	6.9 (6.1)	7.5 (7.1)	7.2 (7.8)	16.5 (10.7)[a]	
Impact prevalence (%)	88 (27.8)	180 (26.6)	131 (31.3)	21 (25.0)	14 (73.7)[a]	
Latin America						
Mean CPQ_{11-14} (sd)	7.1 (5.6)	12.3 (7.5)	14.4 (8.6)	15.9 (8.6)	21.0 (11.5)[a]	
Impact prevalence (%)	47 (20.3)	131 (47.0)	71 (46.1)	36 (62.1)	12 (75.0)[a]	

[a]P<0.001